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AGRICULTURAL ECONOMICS.

ROUND TABLE DISCUSSION: T. N. CARVER, *Chairman*.

T. N. CARVER: Inasmuch as this is the first round-table on Agricultural Economics, since it is, in fact, the first time the subject of agricultural economics has been recognized by the American Economic Association, it has seemed wise to devote most of our time to-day to the consideration of a preliminary question. That question may be stated as follows: What is agricultural economics, what does it include, and what place ought it to have in a college course? It seems desirable to give some time to this question for the reason that there is some disagreement among men who are giving courses in this field as to what they ought to teach.

In order to introduce the subject, to show that the economics of agriculture is a very old subject, and to furnish a basis for further discussion, I should like to call attention to the original meaning of economics as it was treated by Xenophon and Aristotle. Both treated it as the science and art of supplying means for the support, first of the household, and secondarily, of the state. Xenophon's economics was simply a treatise on the management of a household, but it was an agricultural household. It may therefore be called the first treatise on agricultural economics. His discourse on the Revenues of Athens was his only contribution to public or political economy. Aristotle also, in various scattered passages, discourses on the means of providing support for the household. To the agricultural industries of tillage, pasturage, poultry and bee keeping he gives the name

natural economy. Trade and commerce, as well as working for hire, he treats as unnatural.

Both treated the economics of the farm and the household from the private rather than the public point of view, though the question of providing means for the support of the state was also discussed. In modern times, however, the public point of view has come to be more emphasized, mainly because the early mediæval and modern economists perceived that the state could secure ample means only when industry in general was prosperous. The question for the economist and the statesman therefore became, how to make the whole country prosperous. This, I take it, is still the problem. We are still looking at the agricultural industry from the public point of view. We are concerned to know the conditions which will make for national prosperity through the prosperity of its most important industry or group of industries, namely, agriculture. However, this is merely the expression of an individual opinion which may serve as a text. We shall doubtless get real enlightenment from the remarks of the gentlemen who carry on the discussion.

KENYON L. BUTTERFIELD: To my mind the field of agricultural economics cannot be properly defined except by approaching it from the standpoint of the rural problem. The rural problem stated in broad terms is the preservation of the class status of the farmer, industrially, socially, politically. Agricultural economics will consider the industrial features of this problem.

On the other hand, agricultural economics must be considered apart from farm administration, which has to do with the business management of a farm by the individual manager or owner.

It is important, therefore, to segregate agricultural economics from the other departments of rural social

science on the one hand, and from farm administration on the other hand. At the same time the differentiation must not be too sharp. The social and political relationships of the industry must be constantly kept in mind in studying industrial questions. So too, the student of agricultural economics will consider very carefully and in detail the business problems of the individual farmer. I think, indeed, that the teacher of agricultural economics, while delimiting his field pretty carefully, and while having a thorough grounding in economics, will also be a careful student of technical agriculture and farm administration as well as of rural social science as a whole. On the other hand the teacher of farm administration should be first of all a technically trained man, but he ought also to have a thorough comprehension of agricultural economics.

Agricultural economics as thus defined should be a university study, but it should also be given in the agricultural courses of the land-grant colleges and if possible required of all students. Farm administration for such students is the more immediately practical, but they should also have the broader point of view which will come from studying agricultural economics.

With respect to subject matter, in my opinion there should be a careful study of the economic characteristics of the agricultural industry; furthermore, the relation of agriculture to other industries should be carefully worked out. But I think that for most students in our agricultural colleges the best approach to the subject will come through descriptive courses outlining the broad industrial problems of agriculture as they exist to-day.

I should also like to emphasize the importance of a thorough-going, intensive, and long-continued inductive study of the agricultural industry and of the concrete problems connected with it.

EDWARD D. JONES: On the subject assigned to me, *Economics of Agriculture in the Work of an Economist*, I would like to say a few words about its use to a teacher, its use to a student, and the opportunities for investigating agricultural economics which are presented by the agricultural schools.

We are in a period when economists are applying themselves to the collecting of data in many fields never before worked. A few years ago J. E. T. Rogers criticised the science by saying, "Two things have discredited political economy—the one is its traditional disregard for facts; the other its strangling itself with definitions." In the earliest period in this country economics was under the influence of deductive reasoning, and later of the German historical school. More recently its students have scattered in every direction; at first to study finance, money, banking, and transportation; then to make thoroughgoing technical studies in connection with various economic problems; finally to investigate in the field of production in agriculture, manufacture, and commerce wherever there was promise of discovering valuable principles or advancing the knowledge of the structure and processes of industry. As in physical science every student, no matter how limited in resources, is expected to have some sort of a laboratory, so in our science, blessed with a most extensive laboratory for observation, if not experiment, every student should be urged by the force of professional opinion to first-hand investigation along some line. The merits of agricultural economics, as a field for such investigation, are, the possibility of carrying it on at all places, the unusual aid offered by government, the variety found within the agricultural industry, the intellectual refreshment offered by passing from general to concrete facts, (few books are more fascinating to an economist

than the Yearbooks of the Department of Agriculture), the tendency of the subject to check undue development of the distinction-spinning habit of mind, and finally the obvious and abundant usefulness of the work.

The besetting difficulty with the college student who is endeavoring to master the principles of economics is his ignorance of the industrial organism and process which these principles are intended to explain. The result of this is that the principles seem unreal and the student often obtains an exceedingly fleeting hold upon them. In conjunction with instruction in the principles, or immediately afterward, there should be provided studies of a more concrete nature, investing these principles with reality by showing their relation to concrete facts, either *inductively developing them from concrete cases* or *applying them to such cases*. As a candidate for performing such a function in a curriculum of economics, agricultural economics presents the advantages of involving an easily understood contact between physical and economic forces, of giving opportunity for the study of commercial geography or *warenkunde*, if desired, of involving in itself the utmost variety, of presenting the case of a truly productive industry of thoroughly wholesome economic tendencies, and of leading easily to some of our most important national economic problems such as irrigation, forestry, and the public land problem.

In conclusion a word upon the agricultural colleges. The Morrill Act of 1862 and the Hatch Act of 1887 created our system of agricultural colleges and experiment stations. In 1890 the second Morrill Act offered a sum, beginning at \$15,000 and increasing to a maximum of \$25,000 annually, to any state or territory which should institute teaching in agriculture, mechanical arts, English, mathematics, physical and natural sciences, and

economic science, the latter being specifically mentioned in the Act. As a result of this legislation there were in 1905, 43 institutions giving instruction in "economic science", 14 spending less than \$1000, 13 spending between \$1000 and \$2000, and 16 spending over \$2000. These institutions possess advantages for the carrying on of investigation along certain lines in agricultural economics. The opportunity should not be overlooked by the friends of economic science. The members of this Association should not miss an opportunity to recommend for such positions men with ability to investigate the middle ground between agriculture and economics and should not fail to give to all worthy investigations encouragement and recognition.

R. P. TEELE: I have been asked by the chairman to present the conception of agricultural economics held by the U. S. Department of Agriculture.

There is in the Department no bureau nor division which is charged with the study of agricultural economics, as such. However, every bureau and division has, or should have, constantly in view the economic value of the work which it is doing. *Each studies certain elements* of agricultural economics as a part of its own science, but such a study does not require the defining of agricultural economics, and, therefore, we have in the Department no authorized definition.

However, I find that the Office of Experiment Stations of the Department has published a definition and outline prepared by the Committee of the Association of American Agricultural Colleges and Experiment Stations on *Methods of Teaching Agriculture*. This Association represents practically all the agricultural colleges and experiment stations in this country, and this definition, coming

from such an association, is backed by a considerable weight of authority. The definition and outline follow:

SYLLABUS OF COURSE IN RURAL ECONOMICS.

DEFINITION	Rural economics treats of agriculture as a means for the production, preservation, and distribution of wealth by the use of land for the growing of plants and animals. It may include the development of agriculture as a business (history of agriculture), as well as the facts and principles of farm management under present conditions.			
HISTORY OF AGRICULTURE.	Development of different forms.	<div><div>Grazing.</div><div>Plant industry.</div><div>Mixt husbandry.</div><div>Special farming.</div></div>		
	Agriculture in different periods (with special reference to land tenure, equipment, labor system, prominent products, social and financial condition of farmers).	<div><div>I. Prior to 500 B. C. (Egyptian.)</div><div>II. 500 B. C. to 500 A. D. (Greek and Roman.)</div><div>III. 500 A. D. to 1500 A. D. (Western Europe—feudal system.)</div><div>IV. 1500 A. D. to 1800 A. D. (Especially in Great Britain.)</div><div>V. 1800 A. D. to 1900 A. D. (Especially in United States.)</div></div>		
FARM MANAGEMENT.	Capital.....	Land	<div><div>Value as determined by location, suitability, etc.</div><div>Purchase, rental, and sale.</div><div>Cost of maintenance.<div><div>Taxes.</div><div>Rents.</div><div>Interest.</div></div></div><div>Legal requirements.</div></div>	
	Equipment	<div><div>Nature (as related to particular kinds of farming).<div><div>Buildings.</div><div>Fences, roads, wells, drains.</div><div>Implements.</div><div>Live stock.</div></div></div><div>Value.</div><div>Cost of maintenance.<div><div>Taxes.</div><div>Insurance.</div><div>Repairs.</div><div>Feeding.</div></div></div><div>Legal requirements.</div></div>		
	Labor	<div><div>Systems (wage, share, tenant).</div><div>Contracts, including methods of payment.</div><div>Cost, as affected by labor supply, use of machinery, nature of work, etc.</div><div>Management.</div></div>		
	Production	<div><div>Methods and cost (with reference to different systems of farming).</div></div>		
	Marketing	<div><div>Preparation for market.</div><div>Choice of market.</div><div>Transportation.</div><div>Method and cost of sale.</div><div>Legal requirements, e. g., weights, measures, packages commissions, inspection.</div></div>		
	Records and accounts	<div><div>Crop records.</div><div>Feed and milk records.</div><div>Breeding records.</div><div>Inventories.</div><div>Bookkeeping.</div></div>		

In my opinion this definition is too narrow, since it limits rural or agricultural economics to the field of the individual farmer, excluding the relations of the State to agriculture, and all outside factors which have an influence upon the agricultural industry. Therefore, I propose the following definition:

Agricultural economics treats of the principles which guide the individual farmer in the apportionment and use of his means of production, and the factors which influence the production of wealth by means of agriculture, or the distribution of wealth produced by this means.

This definition excludes, on the one hand, agricultural technology; and, on the other hand, those social questions which, however important in a study of the whole subject of rural life, have only a remote bearing upon the production and distribution of wealth.

Having defined agricultural economics in this way, the question whether this or that should be included must be determined by its influence upon the agricultural industry.

In a course of study those factors having the greatest and most evident influence upon the agricultural industry should be taken up first, going farther and farther afield as the time to be given to the course increases. The field for research work would be on the outer limits of the field for teaching, tracing the influence of various factors upon the business of the farmer. Looked at in this way agricultural economics does not deal with a given body of subject matter; it looks at the whole field of human activity from a given standpoint—the effect upon agriculture as a means of producing wealth, or upon the distribution of wealth produced in this way.

F. W. BLACKMAR: Agriculture in the arid region where tillable land is relatively scarce furnishes many lessons of intensive cultivation. The first expense of

getting water upon the land and the fixed charge for maintenance induce farmers to make each foot of soil yield the largest possible return. On the land where several crops are grown in a single year, the tillage and harvest become a steady business uninterrupted by storms or cloudy weather. As the soil is new and fertile, and as the water itself usually carries sufficient fertilizer to replenish the waste, the crop is sure. As the amount of tillable soil is small in proportion to industries the demand for products makes a good market. Under such circumstances farming becomes an investment of capital with a constant and safe return on the investment. Economically, farming partakes of the nature of manufacturing. The prices of land become fixed by the income and reach high marks, some of them in well developed orchards reaching the fabulous sum of \$2000 per acre. The conditions lead to a scientific study of soils and application of water; to a study of the adaptation of crops to the soil, and a careful consideration of methods of cultivation.

The need of agricultural schools and experiment stations is great, and where they have been instituted they have been of great service. The principal things to be taught are analysis of soils, methods of irrigation, amount of water used, the processes of tillage, caring for crops and their marketing, feeding of stock, and the question of repair of waste of lands.

One of the most useful crops in this region is alfalfa, the cultivation of which began in California and gradually extended eastward to eastern Kansas and Nebraska. Its value will soon be recognized in the middle west and on the Atlantic coast. It has power in excess of other clovers to rejuvenate and to restore soils that have been worn by heavy croppings, as it takes the nitrogen from the air and restores it to the soil. It is especially valuable in

the arid region as a forage plant to supplement pasturage on the range. It thus makes stock raising a stable industry by preventing depletion from starvation and freezing of stock. The arid region to-day is a resourceful field for experimentation in agriculture. Its importance is overlooked from the fact of the immense tracts of mountain and desert that may not be brought under tillage. Yet the development of this country will exceed all previous estimates. In the region once called arid there are now over 10,000,000 people and 50,000 miles of railroad. There are over 10,000,000 acres under irrigation. It is estimated that at least 100,000,000 acres may be eventually placed under irrigation. The number of acres will be greatly increased by the process of "dry farming", under light rainfall. It is safe to estimate that through agriculture, manufacturing, transportation, and mining the district once called arid, extending from Eastern Kansas to the Pacific slope, will support a population of 100,000,000 people. Under such conditions the study to preserve the soil is a momentous question, for there is no reason why land should wear out if it is scientifically tilled.

JOHN G. THOMPSON: As a basis for this discussion I desire to recall to our minds the position taken by Adam Smith and by Ricardo, respectively, in regard to *wealth* and *value*. The former emphasized, though not exclusively, *wealth*—the *production* side of industry. Ricardo, however, distinguished sharply between *wealth* and *value*, and emphasized the latter almost exclusively. That is, Ricardo concerned himself with *value* and with *distribution*.

The limitation in the supply of economic goods which afforded a basis for value was, according to Ricardo, a

natural limitation chiefly. Monopoly was the exception and hence not to be regarded. Since the days of Ricardo, however, conditions have changed, and monopoly or artificial limitation has advanced far in respect to labor and capital. Agriculture, representing the third factor in production, has, on the contrary, remained essentially unmonopolized and unorganized—as recently pointed out with admirable clearness by Dean Bailey, of the College of Agriculture, Cornell University.¹ There are, however, indications that the farmers are awakening to the advantages which organization and control of competition may afford. We have been hearing recently of “farmers’ unions”, of “controlled marketing”, of “minimum prices” for farm products, of “restriction of output” (reduction of acreage), and of “shorter working hours” for the farmer. We hear the term “scab” applied to the non-union or independent farmer—the “dumper” who ruins the market by overloading it. We even hear, I am sorry to say, of violence, emanating from some source and offered to the independent farmer. We hear such highly significant expressions as “the crop-rich but money-poor farmer”, and “the market side of farming is the most important side”.

The marked tendency toward the improvement of agriculture on the technical side, and this tendency of the farmers to thus limit competition among themselves constitute the two most important phases of development in reference to agriculture in the United States at the present time. The former tendency, which is represented by the organization of technical agricultural schools from the university down and by numerous technical agricultural journals, corresponds in a general way to the phase of industry emphasized by Adam Smith, that is, *production*,

¹ Century 72: 410-416 [July, 1906].

the larger creation of *wealth*—literally the ‘wealth of the nation’. It has thus—and rightly—commanded the widest approval and support both of the public at large and of the state in its organized capacity. The tendency among farmers to limit and control competition, on the other hand, corresponds to that phase of industry emphasized by Ricardo, that is, the creation, not of *wealth*, but of *value*, and which has to do with distribution rather than with production. It is pointed out by those who participate in this movement that mere improvement in technical production will not necessarily help the farmer, and in proof of this assertion they point to the fact that a short crop often brings the farmer a greater value than a bounteous crop. Indeed, open opposition is sometimes expressed toward the technical agricultural schools on account of their attempts to increase production. This tendency among farmers to limit competition has attracted far less attention than the movement to improve the technique of agriculture, and naturally enough has not received the same commendation from the public. Nevertheless, as a class movement, it has enormous potential significance; for the proper balancing of the interests of agriculturists as a class and of the public at large requires that neither the value side nor the wealth side of agriculture be neglected.

Finally, this analysis seems to throw some light upon the general question of the meaning of the term *agricultural economics*. It appears that generally speaking we should contrast *agricultural economics* with *agricultural technique* rather than with economics in general or with some other so-called special branch of economics—as *railway economics*. That is, we should emphasize the word *economics* rather than the word *agricultural*.

W. A. PECK: The work of the office of Farm Management in the United States Department of Agriculture has been divided into four sections, each having a distinct line of investigational work. One of these is the section of farm economics, in which a detailed study of farms is made. This study treats the farm and the lines of productive activity as definite units, and deals with the economic relation existing between the factors of production, land, labor, and capital. It is to this phase of farm management work—the detailed study of farms—that I wish to call your attention. It is this phase of farm management investigations that is so economic in character, and which, if carried to a successful conclusion, will provide data for putting farms under a good business organization, and at the same time provide economists with material for working out fundamental principles to be used in our educational institutions, and also in developing and maintaining an intensive agricultural industry.

This detailed study of farms consists in getting at the exact daily distribution of labor. Every half hour of labor for every individual worker as it is distributed over the various lines of activity is secured. Daily statements of all sales and expenses, feeding rations, performance records, pasturing notes, etc., are secured. Complete farm inventories are made, farm fields are accurately surveyed, and the acreages in the different crops determined. This work is carried on in coöperation with the best farmers that can be found. The farmers are expected to keep only the crudest records, all the tabulations being made by the office of Farm Management, at Washington. The Department furnishes the forms used by the farmers, gives the franking privilege for sending in reports, and at the end of the season or year

furnishes the farmer with a tabulated statement showing the results of his management. Only those farmers who are interested in getting at the results of their own management are encouraged to take up this coöperative work.

To bring out the relation that the purpose of this detailed study of farms has to some of the practical farm problems a few suggested concrete examples may be of interest. The purpose, as has been stated, is to provide data for bringing all parts of the farm into their most economical relationship—in other words, to combine land, labor, and capital goods in connection with managerial ability so as to produce maximum net returns. This statement of purpose embodies the law of diminishing returns, and many other economic principles. Treating the farm as a unit—what is the proper size of a farm, just how much capital should be invested in live-stock, in fences, buildings, machinery, etc., and in what varying acreages should the crops be grown? In plowing what size plow should be used, how deep to plow, etc.? In producing a corn crop how many times to disc or harrow, how many times to cultivate, what machinery to use? In producing a pound of milk or butter fat how much should be invested in a cow, what kind of feed should be fed, and how much of each kind? Then there are the competing and supplementary crops—when do crops or lines of work compete, and when are they supplementary?

It will be observed that these questions suggest a relative study—that the point of diminishing returns or greatest utility of any given line of production can be determined only by knowing the relation that exists between the different factors of production. The question of the proper combination of these factors must be answered for practically every distinct line of farm activity,

and the farmer's problems are intensified by the uncertainty of the natural elements, as climatic changes, soil variations, the labor supply, etc., and the elements affecting the distribution of marketable products.

It will be apparent that no distinct line separates farm management from agricultural economics. Practical farm management problems form the basis for the study of economic principles. Economic principles practically applied to agriculture will materially assist in perfecting the farm organization and developing intensive rather than extensive farming, both in the production and distribution of products.

EDWARD C. PARKER: The subject matter for Agricultural Economics should be chosen according to the class of students to whom the subject is to be given. If agricultural economics is to be offered as an advanced course of general interest to academic students, it is my opinion that the subject matter should not be of the same nature as that offered to students in agricultural colleges who are fitting themselves to be farm managers, editors or experiment station workers. A large part of pure economics as taught in the elementary courses has a direct relation to the subject of agriculture. In studying the factors of production land is thoroughly discussed, and the law of diminishing returns and rent are based almost entirely upon agriculture. The agricultural student should, by all means, begin his study of business with the study of economic theory, and following this logically he should study current economic and political movements which affect his business. The following topics are suggested as being well fitted to the needs of agricultural students in advanced courses: 1. The acquisition of land in the United States; 2. Population and food supplies in the

United States; 3. Crop statistics and their use; 4. Government reclamation and drainage service; 5. Tariff and the American farmer; 6. Country life education; 7. Land tenures, ownership and leasing; 8. Speculation in farm products; 9. Taxation of farm property; 10. Mutual insurance; 11. The marketing of farm products, including a discussion of coöperative and organized movements among American farmers.

Having studied economic theory and current economic and political movements affecting agriculture as an industry, the subject of farm management can be taught with better results than in the case of students who have not received such preliminary training as outlined. Farm management should be taught from the point of view of the practical farm manager rather than the point of view of the economist who studies and observes agriculture as an industry, and is rarely conversant with the principles of farm management and their application. The following topics are suggested as suitable for a course in farm management: 1. Opportunities in agriculture as compared with other industries. 2. Cost of production studies. 3. Extensive, diversified and intensive systems of agriculture defined. 4. Operating expense, gross receipts and net receipts of farms under various systems of management. 5. Factors which influence the most profitable size of farms and the system of farming. 6. Overcapitalization and under-capitalization in agriculture; relation to profits. 7. Relation of crop rotation and live stock to farm management. 8. Planning farms. 9. Farm labor. 10. Usefulness of farm accounts.

The discussion of these subjects and their application to the management of farms would rarely be interesting or beneficial to the general student. A general course in Agricultural Economics similar to courses offered in

Money and Banking, Public Finance, and Railroads should, in my opinion, consist of material of a more historical and general nature than the outline I have presented.

DAVID KINLEY: The field of agricultural economics, like Gaul, may be divided into three parts: First, those portions of general economics which are of interest to the farmer as a business man, in the same way that they are of interest to other business men. Such, for example, are the general subjects of taxation, transportation rates, the tariff, the money question, and so on. The second portion of the field may properly be called the economics of agriculture, and comprises the economics of farming considered as a private business. Under this division we would discuss such topics as the organization and management of the farm. The question to be answered here is: How can the business of this farmer or that farmer be so conducted as to yield him a net profit? This is a division of the field of private industrial economics, and is to be compared with the study of any other business, such as that of a railroad corporation, from the same point of view. In this field also we would discuss such topics as the comparative cost of production of beef, for example, in Illinois and Argentine. It is a matter of considerable importance to the Illinois farmer if Argentine beef can be sold in Europe at a smaller price than the American beef. We are bound to inquire into their technical methods of production and marketing in order to change ours, if necessary.

We all know, however, that in farming, as in other lines of business, a course of action that may yield a profit to the individual or the class may not be in consonance with the public welfare. This thought leads us to

the third division of agricultural economics, which I may call the social reaction of private agricultural economics. Here we must inquire into the effects produced on the public welfare by particular systems of farming, and insist that these shall be adjusted so that they shall at any rate not militate against the social welfare. We would be bound to consider in this division such matters as tenant farming, the impoverishment of the soil, the movement and condition of the rural population, and so on.

These three divisions, of course, are not sharply separated. The topics will more or less run into one another. Nevertheless, there is a broad difference in the character of the subjects and the treatment to be given them. Much of the vagueness in the discussion of agricultural economics arises from our failure to separate the second division sharply from the others.

B. H. HIBBARD: If agricultural economics can be accurately defined, there will hardly be room for wide difference of opinion as to the scope and outline. The name "economics of agriculture" would probably be less in need of definition, but the naturalness with which the expressions "engineering economics" and "agricultural economics" are adopted may be argument enough to warrant the use of the shorter terms. Agricultural economics, in the first place, is a branch of economics; it implies a close relationship and acquaintance with agriculture. On its technical side, however, it must be recognized that it is economics and not agriculture; and the economist who undertakes its study will approach the subject in a way entirely similar to the manner in which he would undertake a study of labor or transportation. Farm management and agricultural economics have much in common, but it will probably be found advisable not to merge them.

Agricultural economics is that branch of economics which treats of the industrial principles pertaining to the farmer and his business. This is not an ambitious definition; it assumes that the meaning of economics is already understood. Indeed, it would seem that there should be not only a study of the definition of economics, but of the usual outline course in the elements before undertaking the special study of the principles underlying the business of agriculture. This is for the same reason that a musician studies music before he specializes on operatic or sacred selections; for the same reason that an engineer studies arithmetic, trigonometry, and calculus before specializing in railway engineering, notwithstanding the fact that argumentation and politics may later prove his most valuable stock in trade.

In agriculture we find land, labor, and capital, the indispensable factors of production. We find exchange, distribution, and consumption accompanying and following production. We find the use of money and credit, the importance of taxes; in short, the many-sided phenomena of value permeating the business of agriculture as they do all other businesses. It is not convenient to stop a discussion of the value of farm land and go into the larger subject of value, or rent, or capitalization, any more than it is convenient to stop an orchestra to decide how many beats to the measure should be given in six-eight time.

If, then, it can be agreed that the outline course is needed before the special courses are begun, it may be suggested that the outlines be followed by the history of agriculture. This will be long or short according to the tastes and information of the teacher and the opportunities and facilities at hand. That any well-informed graduate of an agricultural course should be familiar with the history of his science hardly admits of argument.

Closely connected with the history should come a careful comparison of agricultural systems, and a study of agricultural geography. Where but one or two semesters are given it will probably be desirable to go at once from the outline to agricultural economics. It is intended that the courses thus far be of such nature that general science students might find them profitable.

As a working basis the following outline is submitted:

Agricultural Economics.

A. Fundamental Theory.

I. *Land*:

1. Public land becomes private.
Policies of the nation and states.
 2. Principles in the early selection of land.
 3. The same under later conditions.
 4. Size of farms and estates.
 5. Usual forms of land tenure.
 6. Rent. Relation of rent to value; relation of agricultural land values to urban land values and to other forms of investment.
 7. Actual values.
 8. Land credit.
 9. Land registration.
- These suggestive topics will stand much expansion.

II. *Labor*:

1. Historical survey.
2. Present Problems.
 - (a) Social distinctions.
 - (b) Relation to machinery.
 - (c) Wages.

III. *Capital*:

1. Methods of obtaining capital.
2. Amount required, and amount actually in use.
3. Varying forms in which farm capital appears,
e. g. machinery, live stock.

IV. *The coördination of the three fundamental factors:*

1. The farmer usually an entrepreneur, landlord, capitalist, and laborer combined.
2. Intensive and extensive agriculture.

B. Specific questions.

- I. Social conditions.
- II. Farm accounts.
- III. Political power.
- IV. Tariff.
- V. Taxes.
- VI. Transportation.
- VII. Prices.
- VIII. Education.
- IX. Organizations.
 1. Slowness to combine.
 2. The grange.
 3. The alliance and kindred organizations.
 4. Farmers' institutes and congresses.
 5. Fairs.
 6. Coöperative undertakings.
 - (a) Farming.
 - (b) Insurance.
 - (c) Stores, general.
 - (d) Buying special supplies, as twine, machinery, seed.
 - (e) Selling, as cattle, cotton, grain, fruit.
 - (f) Manufacturing (and selling), as butter, cheese, canned goods, packing house products.

H. C. TAYLOR: The point of view taken by Professor Hill surprised me at first; and yet I am ready to grant that in the solution of two important questions at least, his viewpoint may be the proper one. For instance if the young man is deciding whether to be a farmer or to enter the industries of the city, and again when deciding what proportion of his energy is to be devoted to making money and what proportion to improving his mind and in serving the community and the state, other than economic motives may well guide him in his decision. But

having decided to be a farmer and to devote a certain proportion of his time to this business, the economic ideal of the largest total net profit should be the guiding principle.

The outline presented by Professor Hibbard contains the more important topics which should be taken up in the field under consideration. The arrangement is not what I would want to follow, but that is a matter of less importance than the content of the course. Professor Parker's paper brings into the light many of the important details of a part of the outline presented by Professor Hibbard, and the work outlined by Mr. Peck shows us how we are to get the facts for a solution of many of the problems of agricultural production. The proportions in which the factors of production should be brought together in order to get the largest net profit, is the central problem which is now being taken hold of by Mr. Peck and his co-workers.

I wish to call attention to the foreign literature of the subject as indicating the scope of the field of Agricultural Economics. The two best representatives of the Germans in this field are Roscher and Goltz. The former in his *Nationaloekonomik des Ackerbaues* discusses the economic problems of the farmer from the viewpoint of the statesman, whose object it is to regulate and promote agriculture by the proper legislation. Von der Goltz, in his *Landwirtschaftliche Betriebslehre*, deals with the same questions from the viewpoint of the individual farmer. The fact that the subject was divided in this way by these eminent men seems to point to the soundness of the position taken by some of the speakers here this afternoon, and yet I doubt if the results justify this conclusion. Had Roscher devoted more time to agriculture from the viewpoint of the farmer his work would have been of greater use to the practical legislator. Goltz

gave lectures on *Agrarpolitik*, which were later published. Following this example, Professor Conrad and Professor Sering include both the point of view of the farmer and that of the agrarian statesmen in their university lectures on agricultural economics. In France the best representative of this line of work is Jusier, who in his *Economie Rural* and his *Legislation Rural* covers both phases of the subject. The tendency is, I believe, for the man whose preparation is all along agricultural lines to want to divide up the field and take the part he is prepared to work, and for the man whose preparation has been largely along the line of general economics to prefer to deal only with the external relations of agriculture, but as one whose training has been equally in agriculture and in economics I have the desire to work both phases of the subject, for the reason that the one throws much light upon the other; in fact the two are one.

W. D. HOARD: The study of agricultural economics needs, first, well organized knowledge concerning the concrete facts of agriculture and their relation to each other; second, a skillful judgment of methods, in dealing with those facts. With the thinker and farmer everywhere, is seen a lack of this thorough organization of knowledge and method. Of what use is it to attempt to deal with the organized forces of nature with disorganized knowledge and judgment? It is this condition of mind that makes of the professor, very often, a mere abstractionist and the farmer a blind worker amid forces and principles he does not understand. The more simple we can make our definitions, the more comprehensive will be our judgment in dealing with economic problems. To adjust the facts of agriculture to their best agreement, in given results, is the essence of economics. Out of such

study comes the application of the wisest methods. We must know the science of the thing. But abstract science leaves the work undone. Results are not achieved. The real economist unites a knowledge of *why* with the truest judgment of *how*. In my experience as a farmer, I must pay constant attention to a study of methods, keeping in mind strict obedience to principles. I must think and work towards a correct expression of my purpose. I must know what nature is and what I can do with her. Beyond the nature of things, I cannot go. Therefore, to know what to do, I must know the nature of the thing I am dealing with. Unfortunately, the men who are interested in these questions are divided into two camps, the thinkers and the workers. There can be no clear conception of farm economics until they are united in the one person. Both forms of knowledge are necessary to prevent uneconomic thought and action. If I waste fertility—employ two acres, two animals, machines or men, to do the work of one—it is uneconomic. If I do not think, as well as work, constructively, in obedience to a well-defined purpose, it is uneconomic. Thus far, at least, have I gone in the study of agricultural economics.

JOHN M. GLENN: I wish to call attention to the fact that the question of rural economy is one that is likely to affect the city as well as the country. If we can make country life more attractive and livable, we will tend to cut off the stream to the city and to draw out some from the city crowds.